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ABSTRACT

Eighty-six studies are reported in this 13th annual review of research in elementary language arts. Efforts are made to include all studies reported in 52 journals from January through December 1973. Discussions and descriptions of the studies are divided into sections on research summaries and listings, language, oral communication, written communication (composition, spelling, and handwriting), pre-first grade programs, beginning reading instruction, programs and grouping practices, vocabulary and word analysis, and reading achievement. The review is keyed to an 86-item bibliography. (HOD)

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A Summary of Research Studies Relating to Language Arts in Elementary Education: 1973

William D. Sheldon, Donald R. Lashinger, Dorothy R. Troike and Jon E. Shapiro

This thirteenth annual review of research in elementary language arts includes comments of 86 studies. Of this number the great majority deal with reading instruction, but there is an increase in the number of reports relating to the other aspects of the language arts.

Attempts were made by the reviewers to include all studies relating to elementary language arts reported in fifty-two journals from January, 1973 to December, 1973. In some cases judgments were made by the reviewers as to whether or not an article was a research study; any other omissions are the responsibility of the reviewers and are probably the result of faulty library searching.

Again, as in previous years, this review is presented under the sponsorship of the Committee on Research of the National Council of Teachers of English.

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Research Summaries and Listings

Weintraub, Robinson, Smith and Plessas (1) summarized 302 reports of reading research published between July 1, 1971, and June 30, 1972. The reports have been categorized under six main headings. The first category includes other summaries of research, classified as general or under specific titles. The second category consists of research literature related to teacher preparation and practice. Category three, the sociology of reading, includes such topics as the current analysis of various reading materials, the effect of reading, and the use of mass media. The largest category in terms of numbers of studies is the fourth, the physiology and psychology of reading. It contains, among other topics, research related to language and reading, visual perception and reading, and socio-cultural factors and reading. Category five, the teaching of reading, has all instruction-related studies from those concerned with preschool reading to college and adult reading. In addition, a section on testing is included. The final category encompasses all research reporting on the reading of atypical learners such as the visually or auditorially disabled. An annotated bibliography follows category six.

Otto and others (2) presented the forty-first summary and review of research to appear in *The Journal of Educational Research*. The series was begun in 1933 by William S. Gray, who continued the annual reviews until his death. Helen Robinson did the 1961 review; and Theodore L. Harris continued with other members of the Wisconsin group assuming major responsibility in recent years. Through 1972, exactly 1,300 journal pages have been devoted to the reviews and a total of 4,574 studies cited. The authors have reluctantly decided that the forty-first review will be the last annual summary to appear in *The Journal of Educational Research*. In the opinion of the authors, the contributions of the ERIC effort, the *Reading Research Quarterly* annual review, and other specialized summaries adequately meet the need for a systematic presentation of research. As in previous years the authors have grouped studies in the forty-first review under the following areas: (1) The Sociology of Reading; (2) The Psychology of Reading; (3) The Physiology of Reading; (4) The Teaching of Reading.

Smith and Otto (3) reported summary data for the forty-one annual reviews of studies related to reading reported in *The Journal of Educational Research*. Total studies reported each year are reported along with lists of journals cited most frequently in the areas of sociology, psychology, physiology, and the teaching of reading and similar information. The purpose of this summary is to expedite reviews of the literature related to reading.

LANGUAGE

Bartel, Grill and Bryen (4) delineated a number of phonological and syntactic characteristics of black English and then presented a review of recent comparative studies. The authors concluded that, while evidence is mixed concerning the question of whether a language deficit exists among lower-class black children along with a

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dialect difference, there is clear evidence of the existence of a dialect. The problem facing educators is that no standardized tests have been developed for use with speakers of the dialect. The authors concluded that the use of available tests with dialect speaking children may result in gross errors in educational placement of these children.

A study of first grade subjects by Levy (5) provided evidence for the rejection of suggestions that disadvantaged, inner city black children are non-verbal or that they have no linguistic concepts. The subjects produced a diversity of words as they told stories suggested by pictures in books. The words were used in categories that were easily identified for syntactic coding, which was the first stage of the analysis for the vocabulary tabulations. Additional evidence of the children's linguistic development was provided by the length of their sentences. The findings indicated that, insofar as oral language knowledge is related to learning reading, the population represented by the subjects had adequate language skills. There was no evidence that the children were too deficient in linguistic abilities to learn to decode words and comprehend written communication.

In a report of a study that won an NCTE Citation for Promising Research in 1972, Koziol (6) discussed children's knowledge of noun plurals. He reported what aspects of the system have been mastered by kindergarten age and what details are not yet perfectly learned even by third graders. He concluded that by the age of six, it was evident that the children had gained receptive control over much of the noun plural system. At the same time, it was also evident that they had not gained productive control over the system at the end of the kindergarten year. The data consistently supported the conclusion that children at each grade level could both recognize and produce noun singulars and plurals on real words with a greater proficiency than they could recognize or produce these forms on nonsense words.

A study by Francis (7) of children's notions of *letter*, *word* and *sentence* confirmed Reid's and Downing's findings that children's concepts of *letter* and *word* are vague and confused. The concepts were clarified, however, as the children learned to read, and the concept of *sentence* also became partly understood. Many confusions, however, such as *word* with *letter*, *number* or *name* were only reflections of the fact that the concept *word* is not very clear-cut in any case, and perhaps the difficulty experienced by the children was not so much that the concepts are abstract but that they overlap in their application and are somewhat ill-defined. The difficulties, however, are attributed not so much to the abstract nature of the concepts, for understanding of the technical vocabulary correlated more with reading skill than with general vocabulary; rather they were attributed to complexity, for *reading* covers a wide range of reference, and *word*, *sentence*, *letter* and *sound* are related concepts with considerable areas of overlap in meaning.

Bull and Wittrock (8) determined the effects of self-discovered imagery, experimenter-supplied images, and verbal definitions on the retention of definitions of nouns. Eighty-seven fifth-grade children were randomly assigned to the three conditions and given 16 definitions to learn. The children were instructed to read and learn the definition of each word: (1) by discovering an image and drawing a picture of it, or (2) by tracing an illustration of the definition, or (3) by copying the written definition. Recall on a multiple-choice test administered one week after instruction was statistically significantly better for subjects in the imagery-discovered

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condition than for subjects in the verbal definition condition.

Language of children ages three to five was reported by Shields and Steiner. (9) A sample of spontaneous speech by unselected children engaged in normal nursery activities was examined for developmental features, and for the effect on language of different interpersonal situations. Using a unit of measurement based on the length of the major clause, the predicate unit, an analysis of the sample showed that length of clause was associated closely with increasing age but insignificantly with socioeconomic status. A second measure, utterance length, was used to measure communication flow and this showed that certain adult-dominated conversational styles which reduced the child to a respondent position, markedly restricted the length of the child's utterances, while other types of adult/child communication facilitated fluent speech.

Although immature constructions appeared in a decreasing proportion of the predicate units of children from all backgrounds as the age of the children advanced, colloquial omission of subject and verb auxiliary persisted more strongly in the speech of working-class children and this might cause some initial difficulty in learning to read and write the extended form of standardized English text which would be alien to their normal speech in many of the commonest constructions.

Mickelson and Galloway (10) examined the differences in verbal concept development between Indian and non-Indian 5- and 6-year-old children entering kindergarten and first grade in a Canadian school. The *Boehm Test of Basic Concepts* was used as a measure of verbal concept development. Results indicated that significant differences existed between groups in favor of non-Indian subjects. Implications for intervention programs which will insure that Indian children master simple verbal concepts used in conversation and in classroom instruction were briefly discussed.

Hare, Hammill and Bartel (11) reported a construct validity study. Six subtests of the *Illinois Test of Psycholinguistic Abilities* (ITPA) were matched with parallel tasks which were equivalent to the subtests except in one dimension of the test's theoretical model. A total of 16 subtests and tasks were administered to 126 third grade children who met the same criteria used to select the original ITPA standardization sample. The data were factor analyzed using a principal components solution. Seven factors emerged and accounted for 66 percent of the variance. Each of the ITPA subtests loaded highly on one factor. In addition, the subtests loaded with the other related tasks on factors which are clearly identifiable in terms of the model regarding level, process, and channel.

Another report on the ITPA was done by Burns and Watson (12). Their research attempted to determine whether factor analysis of the 12 ITPA subtest scores earned by 90 underachieving children would support the dimensions of psycholinguistic processes, levels of organization, and channels of communication as described in the clinical model of the instrument. Five factors emerged from the analysis. There was no support for the processes of reception and association, but expression was substantially upheld. Neither automatic nor representational levels of organization emerged as separate entities. Two of the five factors were largely visual-motor and three were auditory-vocal, giving considerable support to the dimension of channels of communication. These findings do not support the notion of 10 single abilities and therefore have definite implications for intervention and remediation programs based on ITPA subtest profiles.

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Another study involving the ITPA was presented by Waugh (13). Selected subtests of the experimental and revised editions of the ITPA were administered to 30 six-year-old subjects. Correlations between subtests of the two editions were found to be of the same general magnitude as test-retest coefficients reported for the subtests of each edition. It appears that performance on one edition of the ITPA may be compared with performance on the other, and that the two editions may be used interchangeably for some purposes.

Lippman and Shanahan (14) reported a study of pictorial facilitation in paired-associate learning. The effects of addition of pictorial materials on the stimulus side of paired associates were studied in two experiments. In the first experiment, 80 third-grade children learned a nine-item, paralog-word list composed of three stimulus conditions: control (C), picture (P), and accentuation (A). Three types of items were included within Condition A to allow for differentiation of accentuation effects due to increased proximity of picture to word (superimposition and one letter) and effects due to figural unity (inclusion). Acquisition and retention of A items was superior to that of P or C items which did not differ. The accentuation that maximally integrates the stimulus word and picture, indicating that figural unity, not just proximity, is critical to facilitated learning. Experiment II was designed to examine the relative contributions of interaction and meaningfulness of interaction in paired-associate learning. Two hundred and forty children learned lists of word pairs. Two conditions in addition to those in Experiment I were verbal context (V) and picture interaction (I). The results indicated that interaction, even when nonmeaningful, was more facilitating than juxtaposition of picture and word. The implications for presentation of first- and second-language vocabulary items were discussed.

Bartel, Grill and Barte (15) reported a study of forty-eight children in a private school for the learning disabled (LD), and 48 children in public school classes who were administered a word association test of 50 stimulus words. All children performed best when the stimulus word was a noun and performed most poorly on prepositions. Older children performed better than younger, overall. No significant differences were found between normal and LD children. Among LD children, a significant interaction between IQ and age was found, with young children of low IQ performing most poorly. Young, low-IQ children also showed perseveration to a much greater extent than did any other group, resulting in a significant age x IQ interaction on perseveration. Discussion centers around memory and attention as possible explanations for the findings.

Wiig, Semel, and Crouse (16) compared the application of morphological rules by 10 high-risk and 10 normal children and 12 learning disabled and 12 achieving children. An adaptation of Berko's experimental test of morphology was administered. High-risk and learning disabled children gave significantly fewer correct responses than their controls. For high-risk children, the greatest relative performance differences were for third person singular, past tense, and adjectival inflections. For learning-disabled children, the greatest relative differences were for third person singular, possessives, and adjectival inflections. It was concluded that high-risk and learning disabled children exhibited differential and qualitatively similar delays in the acquisition of morphological rules.

Huizinga (17) reported on the relationship between the ITPA and two measures of intelligence. In order to assess the comparability of the revised ITPA, the

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Stanford-Binet, and the WISC, 100 six-year-old children from an average socioeconomic area were given a standardized administration of the three measures. Results indicated high comparability among the IQ/PLQ scores of the three measures as well as highly significant relationships among some of the individual subtest and part scores of the WISC and ITPA. The correlations between WISC Verbal and Full Scales and the ITPA measures were higher than those of the WISC Performance Scale. Formulas for estimating Stanford-Binet and WISC IQ from the ITPA PLQ were also provided.

A study by Anastasiow and Staybrook (18) investigated the differences and similarities in the language miscues of black students in kindergarten, first grade, EMR classes, and the CA peers of the EMR by means of the responses to a variation of the Menyuk repeated sentence task. The sentences employed a wide variety of basic sentence types and syntactic structures. It was found that the EMR were similar to their CA peers on concrete word errors, and similar to kindergarten subjects on function word errors. These results lend support for the hypothesis that EMR subjects have a slower rate of language development. It is also pointed out that existing language programs for EMR should concentrate on function words.

Imitation and modeling were compared in a multiple-baseline individual analysis by Whitehurst and Novak (19). Probe pictures and training pictures were presented to normal preschool subjects. In modeling, an adult used sentences—including either participial, prepositional, appositive, or infinitive phrases—to describe training pictures. Without responding to the training pictures, the children were asked to describe the probe pictures. In imitation training, in addition to responding to probe pictures, subjects were reinforced directly imitating a description of training pictures. The dependent variable was the frequency with which the children used the phrase type being exemplified on training trials to describe pictures presented on probe trials. Both procedures were successful in producing imitation of the structure of the model's utterances on probe trials even though the content of the utterances on probe trials was not imitative. Imitation training was effective for every phrase type and subject while modeling was effective for only some subjects and some phrase types. Relationships between these two procedures and the normal environment of language acquisition were discussed.

The development of base syntax in normal and linguistically deviant children was investigated by Morehead and Ingram (20). Language samples of 15 young normal children actively engaged in learning base syntax were compared with samples of 15 linguistically deviant children of a comparable linguistic level. Mean number of morphemes per utterance was used to determine linguistic level. The two groups were matched according to five linguistic levels previously established and grammars were written for the language sample of each child. Five aspects of syntactic development were chosen as the basis of comparison between the two groups: phrase structure rules, transformations, construction (or sentence) types, inflectional morphology, and minor lexical categories. While few significant differences were found for the more general aspects of syntax, such as phrase structure rules, frequently occurring transformations, inflectional morphology, and the development of minor lexical categories, significant differences were found for the less general aspects of syntax. For example, significant differences were found between the two groups for infrequently occurring

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transformations and the number of major syntactic categories per construction type. In addition, the deviant group also showed a marked delay in the onset and acquisition time for learning base syntax. These results were discussed according to transformational and cognitive developmental theory.

Children's questions were the subject of a study by Meyer and Shane (21). A comparison of the question-asking behavior among two groups of children separated by a span of some 33 years (from time of collection) indicated that the underlying developmental processes involved in the question-asking behavior of children have changed very little. In general, the data supported Piaget's conceptualizations concerning question-asking behavior, especially with respect to questions focusing on physical causality. The data also indicated that females were more sophisticated in their question-asking behavior, which reflected their advanced linguistic skills.

James and Miller (22) reported a study of children's awareness of selection restriction rules in sentences in two groups of children, 4-8 to 5-3 years and 6-8 to 7-3 years of age. The 32 children were asked to identify anomalous and meaningful sentences as either "silly" or "okay." Information about the subjects' use of selection restriction rules was acquired by having them convert the anomalous sentences into meaningful ones. Analysis of the subjects' responses on the 2 tasks indicated that both 5- and 7-year-old children are capable of distinguishing between anomalous and meaningful sentences although 7-year-olds demonstrated greater awareness of selection restriction rules. Seven-year-old children were more proficient than 5-year-olds at using selection restriction rules in sentence production.

Wiig and Semel (23) examined the comprehension of linguistic concepts requiring logical operations in 32 learning-disabled and 16 achieving children. The results indicated that the learning-disabled children made significantly more errors than their controls. Comparison of the performance of learning-disabled males and females indicated no significant differences. It was concluded that children with specific learning disabilities exhibit significant deficits in their ability to comprehend linguistic concepts requiring logical operations. These deficits were interpreted to reflect impairments of abstraction and generalization and simultaneous analysis and synthesis as well as delays in logical development. Subsequently, the effect of remedial intervention was assessed in six learning-disabled, first-grade, transition-class males. The results showed no significant performance changes during a six-week control period before training. In contrast, there was a significant improvement in sentence comprehension after six weeks of remedial intervention. The preliminary finding that remedial intervention effectively improved logicogrammatical sentence comprehension indicates a favorable prognosis for the remediation of these deficits in children with learning disabilities.

McGrath and Kunze (24) demonstrated another way of measuring increasing precision in generating linguistic structure by children who are beyond the age for primary language acquisition. Tag questions were elicited from normal children ranging in age from five to 11 years. Their errors in generating tag questions established that there is a definite hierarchy of difficulty involved in the acquisition of the four linguistic operations which can account for tag question formation. These operations, from most to least difficult, are (1) addition or deletion of negation, (2) auxiliary verb selection, (3) pronoun selection, and (4) inversion of the pronoun and the auxiliary verb. This hierarchy

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remains constant from five through 11 years of age. Evidence is presented that younger children tend to abstract alternate phrase structure rules which are less complex (relative to the number of operations required) than the rules which can account for spontaneously generated tag questions.

A study of the acquisition of semantic restrictions by young children was presented by Howe and Hillman (25). Children in nursery school through fourth grade were tested for their acquisition of three different kinds of semantic restrictions: Animate Subject, Animate Object, and Special Restrictions. Using the children's ability to judge accurately the nonreversible character of sentences containing such restrictions, it was found that acquisition of these restrictions continued well into primary school. Animate Subject restrictions were acquired first, Animate Object restrictions last, with Special Restrictions being intermediate. Finally, lower socioeconomic status children were found to acquire these restrictions later than children of middle-class status. The results were interpreted relative to McNeill's "horizontal development" hypothesis.

ORAL COMMUNICATION

Auditory assembly of segmented sentences was the subject of a study by Schuckers, Shriner and Daniloff (26). Imitative performance on an assembly task consisting of six sentences, four to nine words in length, in which words in the sentences were separated by one of four conditions of pause-time (silent intervals of 125, 250, 500, and 750 msec), was compared to performance on the same six sentences spoken normally. Tape recordings of these five conditions were played to 75 preschool children instructed to repeat them. Results suggested that insertion of silent intervals in sentences does not overwhelm the child's perceptual mechanism. Children are able to encode the disrupted stimulus with normal intonation prosodic patterns. Error patterns vary regularly with sentence length and lexical item-type in normal and interrupted sentences. Segmented sentences, as he perceives and reproduces them, do reflect upon a child's knowledge of grammar. Silent intervals do make echoic behavior more difficult.

Beasley and Beasley (27) also reported a study on the auditory assembly abilities of children. The auditory reassembly ability of Black and white, inner-city school children was investigated as a function of grade level (first and third grade). The stimuli were temporarily segmented CVC monosyllables. Both semantically meaningful and nonmeaningful monosyllables were used. Interphonemic intervals (IPI) of 100, 200, 300, and 400 msec were studied. Ten children from each race/grade group responded to 10 meaningful and 10 nonmeaningful CVCs at one of the four values of interphonemic interval. In all, 160 subjects were studied. The results indicated that third-grade children performed the auditory reassembly task significantly better than the first-grade children. Although there was no difference between Black and white children averaged across grade level, white first graders performed significantly better than Black first graders. All children, irrespective of race or grade level, performed better on the meaningful than nonmeaningful stimuli. Performance for the 100 msec interphonemic interval was significantly better than that for 200, 300, or 400 msec intervals.

LaBelle (28) examined sentence comprehension in two groups of children. Sentences recorded with pauses at major phrase boundaries, pauses within major phrase boundaries, and with no pauses were presented to 18 children with a mean age of three years, eight months, and to 18 children

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with a mean age of five years, three months, on a sentence comprehension task. The younger children made significantly fewer errors when pauses were placed at major phrase boundaries than when they were placed within major phrase boundaries or were not present. The presence or absence of pauses did not significantly affect the sentence comprehension performance of the older children. The results suggest that the ability to segment sentences perceptually is a developmental phenomena in that the younger children could not as readily comprehend sentences with structurally irrelevant cues or no cues at all. The results also suggest that the phrase may be a unit, although not necessarily the only unit, involved in sentence comprehension.

Pressnell (29) compared the acquisition and development of syntax in oral language for 47 congenitally hearing-impaired children between the ages of five years and 13 years with that of normal children. The *Northwestern Syntax Screening Test* was administered and a 50-sentence spontaneous-language sample was scored and analyzed. In addition to the significant differences found in the rate of acquisition of syntax in favor of the normal children, some differences were found in the sequential order of development for particular verb constructions. The investigator hypothesized that such differences were related to the teaching order in the classroom and to the degree of visual-auditory cues inherent in the language constructions for the hearing-impaired children. Information from the case histories was used in an attempt to identify the factors contributing to the development of syntax for the hearing-impaired subjects. Of the six factors considered, only chronologic age and severity of hearing impairment were identified as contributing factors for these subjects. However, those hearing-impaired children who have achieved good oral language skills would be attending schools with hearing children and, therefore, were not represented in this study.

The purpose of a study by McCroskey and Thompson (30) was to determine whether comprehension of a spoken message by children with specific learning disabilities was affected by altering the rate at which the message was presented. The subjects were 20 children between 5 and 17 years of age who demonstrated a disability in comprehending spoken messages but whose auditory sensitivity was within normal limits. The stimuli were 50 simple declarative sentences presented at five predetermined message rates. The rates included two conditions of expansion, a normal rate, and two conditions of compression. The results indicated that rate did not influence comprehension when the data from all subjects were pooled; however, analysis of data from the 10 youngest children revealed significant differences in comprehension according to rate of speech.

Levy and Cook (31) administered a dialect proficiency task and an auditory comprehension task (stories and questions) to 32 black second graders. Half of the subjects received the auditory comprehension task in black nonstandard English; the other half received the task in standard English. Subjects were asked to identify the race of the speakers and how well they liked the stories and speakers. Performance was significantly better on the questions in the standard treatment. Within treatments, there was a positive correlation between dialect proficiency and auditory comprehension. The subjects correctly identified black speakers but tended to misidentify standard speakers. The results are discussed in terms of a "difference" vs a "bicultural" model of dialect proficiency and achievement.

Henderson and Garcia (32) reported a

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study of the effects of a parent training program on the question-asking behavior of children. Mothers of Mexican-American first-graders were divided into four groups according to the Solomon design. Experimental mothers were trained to use modeling, cueing, and reinforcement to influence their first graders' question-asking; control mothers were not. The effects of treatment on the child's baseline question-asking level and ability to learn from examiner instruction were examined by administering a measure to the children, pre- and post-parent training. Their question-asking was assessed during three conditions: baseline, examiner instruction on question-asking, and generalization. Post-treatment assessment revealed that the question-askin of both experimental and control subjects increased significantly in response to instruction provided by an examiner who modeled question-asking behavior. Experimental subjects asked significantly more questions than control children across all three post-treatment measurement conditions (baseline, instruction, and generalization).

Berry and Erickson (33) investigated the comprehension of speech among children in maturational stages of linguistic development when speech was presented at varying rates of utterance by a trained speaker. Five groups, each consisting of a subgroup of 10 kindergarten and a subgroup of 10 second-grade children, were presented with a tape-recorded administration of the receptive section of the *Northwestern Syntax Screening Test*. Each group heard the test at one or another of the following rates: 2.6, 3.4, 4.7, 5.3, or 6.3 syllables per second. A mean comprehension score was determined for each group and subgroup, and a treatment-by-levels analysis of variance was completed. Results indicated that comprehension was higher at the two slower rates than at the three faster rates. Rate by grade interaction was nonsignificant and comprehension differences between sexes appeared virtually nonexistent.

Fygetakis and Ingram (34) tested the effectiveness of a program of language rehabilitation that combined current knowledge about language development with established techniques of programmed conditioning. The subject was a five-year-old girl with a very reduced language system. For a five-month period, she was trained to produce sentences with structures that characterized the next level of development, based on what is known about stages of language acquisition. The sentences were presented through programmed conditioning. Language samples taken before and after training were compared; it was found that the second sample showed a marked gain in mean length of utterance and a large increase in the use and complexity of basic grammatical relations.

WRITTEN COMMUNICATION

Composition

McDaniel and Moe (35) studied the writing of second-grade students from varying backgrounds. High-frequency words used in the writing of Black, White, and Spanish-surname students of different socioeconomic levels were compared in order to determine if differences existed in this aspect of language. Classroom teachers provided illustrations with which to elicit writing responses. Student responses were then key-punched and subjected to computer analysis. A marked similarity was found in word ranking and in percentage of use figures when the high-frequency words used by students from different SES and ethnic backgrounds were compared. The investigators recommend that in view of the similarity in the results across ethnic and SES backgrounds, that the high-frequency words identified in the investigation

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be among the first words students learn to spell and write.

The purpose of a study by Shapiro and Shapiro (36) was to investigate the effect of two methods of reading instruction on children's ability to write original compositions. Six hundred eighty-four first and second graders (i.t.a. and T.O. pupils) wrote two compositions which were evaluated on length, vocabulary level, content, and originality. At both the grade one and the grade two level, the essays of the i.t.a. sample were longer and at a somewhat higher vocabulary level. Further, in terms of both the Content and Communication scales, there were at both grade levels statistically significant differences in favor of the i.t.a. group.

Spelling

A study dealing with spelling was conducted by Hill and Martinis (37). An individualized spelling program which utilized the visual-kinesthetic-tactile modes of instruction was conducted with a population of children with unspecified learning disabilities. The experimental group had a marked increase in the total number of words learned during the program and displayed an 84 percent retention after three weeks. It appeared that this type of spelling program may be efficient with certain children as a classroom remediation procedure.

Simon and Simon (38) presented an excellent article on "Alternative Uses of Phonemic Information in Spelling." The purpose of the paper was to distinguish several different ways in which phonemic information might be employed in spelling, to examine some empirical data on the consequences of using these different information sources, to formulate hypotheses about the underlying processes involved, and to suggest possible implications for the teaching (and learning) of spelling. Careful study of this paper is absolutely necessary for any researcher concerned with the use of phonemic information in spelling.

Handwriting

Hirsch and Niedermeyer (39) investigated the effects of two kinds of letter formation practice and a form of letter discrimination training on the handwriting performance of approximately fifty kindergarten children. After being pretested, subjects were randomly assigned to four treatment groups: (1) copying only, (2) faded tracing only, (3) copying and letter discrimination training, and (4) faded tracing and letter discrimination training. After 10 weeks of instruction, it was found that the letter formation behavior of all groups had improved significantly. However, subjects who had received copying exercises performed significantly better than those who had received faded tracing exercises. Letter discrimination training had no effect on letter formation performance.

A second study by Niedermeyer (40) utilized the findings from the report in the paragraph above. He concluded that systematically developed and sequenced materials can effectively promote beginning printing skills; kindergarten children can effectively learn to print; there seems to be no large difference in how well children of various socioeconomic levels and ethnic groups learn to print in kindergarten.

Fauke and others (41) attempted to determine the effectiveness of a behavior modification procedure using primary and social reinforcement, combined with several instructional procedures, to improve the letter identification and handwriting skills of a six-year-old boy. Results showed that the subject achieved 100 percent proficiency in oral identification, writing letters without a model over the experimental period of three weeks from their baseline

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lows of 43 percent, 25 percent, and 5 percent respectively. It was also noted that this improvement generalized to the regular classroom.

PRE FIRST GRADE PROGRAMS

There are twelve studies related to pre first grade children. Natalie Sproull (42) video-taped thirty prekindergarten children viewing the same pre-taped Sesame Street program either as single or group viewers. The tapes were coded for visual attention, modeling behaviors and other meta-communication. Children averaged eye contact with over 80% of the program. Group viewers exhibited a larger number and variety of verbal and nonverbal targeted and nontargeted modeling behaviors than single viewers. Overt program-elicited amusement was more frequent for groups than singles. Children exhibited vicarious participation as evidenced by direct reaction to the program about every four minutes. Other behaviors included labeling, associating, evaluating, reading and predicting.

Zigler (43) and others advanced the hypothesis that the exceptionally low IQ scores obtained by economically disadvantaged young children on the P.P.V.T. was due to motivational factors rather than specific linguistic deficits. It was predicted that economically disadvantaged children would obtain higher Peabody scores if re-examined by the same examiner. Testing of the prediction revealed that the increase of scores was due to a decrease in test anxiety rather than being retested by a similar examiner.

O'Malley (44) hypothesized that acquisition of a multiple discrimination task involving letters of the alphabet would be facilitated by pre-training in a relevant as contrasted with an irrelevant stimulus dimension, by reducing the number of letters initially presented in a set, and by arranging the letters in the reduced sets so they may be cumulatively reviewed. Children aged 4-6 generally learned more effectively when they were pre-trained on a relevant dimension and allowed to review smaller sets as they learned the full list.

Samuels (45) studied the effect of distinctive feature training on paired-associate learning with ninety kindergarteners. The children were assigned to one of three treatment groups. The experimental group got visual discrimination training that forced attention on the distinctive features of letters *b*, *d*, *p*, and *c*. Control Group 1 got visual discrimination training on the same letters, but attention was not drawn to the distinctive features. Control Group 2 got equal exposure to the same material as the experimental group but did not get visual discrimination training. All groups received the same letter-name instruction. The analysis indicated no difference between the two control groups, but the experimental group learned letter names in fewer trials and with fewer errors, supporting the hypothesis that distinctive feature training facilitates paired-associate learning.

Cutler (46) and others compared discrimination and reproduction tests of children's perception. A test of visual form discrimination independent of motor ability was constructed and compared to a test of visual-motor reproduction adapted from the Geometric Design subtest of the W.P.P.S.I. (Wechsler Preschool and Primary Scale of Intelligence) to determine if the two were measuring the same process. The subtests were 42 normal 5-year-old nursery school children. While results indicated that children who did well on the reproduction task also tended to do well on the discrimination test ($\tau = -.55$), there was little relationship between the kinds of mistakes made on the two tests, even though the same geometric figures

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were involved. Implications for the assessment of perceptual ability in young children are considered. "The use of visual-motor activity to measure visual-perceptual functioning in young children may confound results by introducing reproduction errors unrelated to deficits in visual perception."

Erickson and Otto (47) studied the effect of intra-test similarity and impulsivity-reflectivity on 40 impulsive and 40 reflective kindergarten children's word recognition performance. The intent of the study was to determine what effect the impulsive-reflective conceptual tempo and the high and low intra-test similarity variables would have on the word recognition of beginning readers. Analysis of variance indicated that while degree of intra-list similarity had little effect on the word recognition skill of impulsive children, the reflective children who learned the list of highly similar words tended to do better on the word recognition task than reflective children who learned the low similarity task.

Mendels (48) studied the predictive validity of the Lorge-Thorndike Intelligence Tests (L.T.I.T.) at the kindergarten level. Seventy-nine subjects were administered the LTIT at the end of kindergarten. In mid-first grade the subjects were tested with the Metropolitan Achievement Tests. In addition teacher grades and reading level data were collected for each S. Correlations between the LTIT and the academic criteria ranged from .46 to .62. While stepwise regression analyses revealed that the demographic variables of sex, school ability, age and father's occupation increased the power of prediction (multiple R's ranged from .64 to .78), the LTIT alone was judged to be a valid prediction of academic achievement.

Baines and Snortum (49) made intensive observation of the classroom behavior of students enrolled in a Montessori academy versus students in a public school. While students in the two schools showed a similar distribution of time between concentrated academic effort and distractive activities, the two groups were sharply distinguished on most other behavioral measures. In general, the classroom behavior of the children coincided with the educational philosophies espoused by the two types of schools.

Entwisle and Huggins (50) experimented with the problem of iconic memory of 23 first-grade children. Forty slides of landscapes and cityscapes were shown in rapid succession. Later these slides of unremarkable scenes, all unfamiliar to the children, were recognized with surprising accuracy after periods of time from a few hours to one week. Further observations of second-grade children suggest that children are considerably less proficient in recognizing verbal material describing the scenes depicted in the slides.

The point of the paper suggests that the iconic skills may be an important factor in the education of preliterate children, or children who for various reasons do not develop reading facility as well or as early as others.

Saltz (51) studied the effects of Part-Time Mothering on the IQ and SQ of 81 young institutionalized children. A Foster-Grandparent group received part-time "mothering" by elderly institutional aides for a period of up to or more than 4 years. A control group in a similar institution did not receive supplementary "foster grandparent" care. There was a significant difference in IQ in favor of the FGP children. This group also made average progress in SQ over long periods of residence in the institution. Draw-a-Man IQ scores were significantly lower than Stanford-Binet IQ scores for both experimental and control groups.

Rand (52) experimented with training methods with 29 girls and 19 boys, aged 3-5 years, designed to improve these preschool

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children's ability to analyze figures and to utilize drawing rules compared with effect on figure discrimination and copying accuracy. Drawing-rule utilization resulted in improved copying accuracy but did not improve discrimination ability, while training in visual analysis resulted in improved discrimination ability but not improved copies. Further, increased improvement in figure discrimination was related to decreased copying accuracy. It was concluded that drawing rules are essential and that adequate visual analysis is necessary but not a sufficient prerequisite to the production of accurate copies.

BEGINNING READING INSTRUCTION

Vandever and Neville (53) studied the effect of visual, auditory and tracing cues on learning for 20 good and 20 poor decoders assigned to four instructional groups. Two words in each of six sessions were presented by stressing visual cues, two by stressing auditory cues, and two by stressing tracing cues. Poor decoders learned more words when visual and auditory cues were stressed than when tracing cues were emphasized. It is suggested that it may not be appropriate to stress tracing cues for first graders having decoding difficulty.

Wooden and Pettibone (54) investigated the effectiveness of three reading approaches: basal text, Miami linguistic and combination of linguistic and perceptocognitive approach with 522 Spanish-speaking first grade students.

The results revealed no significant differences in reading achievement and only the tendency of programs that stress aural-oral patterns to increase listening comprehension and programs that stress perceptocognitive skills to increase certain of these skills, in this case spatial relations and laterality.

Whisler (55) investigated whether a program of visual memory would cause growth in visual discrimination skills and total reading skills of 295 first grade students. Six classes (152 students) received visual memory training for 15 weeks in addition to a basal reading program while 6 classes (143 students) received only basal reader instruction. The visual memory training consisted of 75 lessons administered to the whole class together at the rate of one per day. The lessons progressed from exercises involving pictures to letter forms, to words and phrases.

The experimental groups showed greater gains in both visual discrimination and total achievement. High achievers in the experimental group scored significantly higher than high achievers in the control group in visual discrimination, but low achievers of the experimental group did not score significantly higher than low achievers in the control group in either visual discrimination or total reading.

Visual memory training significantly increased the word reading sub-test score did not significantly increase the paragraph meaning sub-test score.

Mason and Woodcock (56) attempted to determine the observation behavior first grade children exhibit before formal teaching of printed words is begun in order to suggest methods of initial instruction which would cause children to focus their attention to the entire set of letters. Children were administered a visual memory task and were asked to circle words like the ones shown. The results indicated that children overgeneralize in their early identification of printed words, emphasizing the first letter rather than the general contour of configuration.

It was suggested that attention be directed to ordering of letters other than the first whenever presenting a new word which has the same first letter as one

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already taught a id delete exercises which direct children to draw contour boxes around printed words and match words to black boxes.

Williams (57) investigated the relationship of self-concept and reading of 133 first-grade children and found no significant correlations between objective scores of young children's self-concept and their first or second grade reading achievement. Only IQ, RR and examiner were related to reading achievement in a significant manner.

PROGRAMS AND GROUPING PRACTICES

Cooper and Sterns (58) compared student social adjustment and achievement in reading and language of fourth and sixth grade pupils in an experimental dual-teacher organization and a modified self-contained classroom organization. There were no differences in achievement but there were significant changes in sociographic results favoring the children in self-contained classes. It suggests that problems of certain students may be greater in a team teaching organization than in a self-contained classroom.

Swalm and Kling (59) compared the effects of two methods for increasing reading rates of pupils in grades 5 and 6. The experimental group had timed rate drills for 10 weeks while the control group had free reading and direction for reading faster during the same time. The timed reading group showed the greater gain in reading rate on all 3 tests. However, comprehension gains for both groups were insignificant.

Proger and others (60) investigated advance and concurrent organizers for detailed verbal passages with 112 sixth grade pupils in one study and 80 pupils in another. In the first experiment, comparing a non-organizer control group with four methods of advance organization: completion pretest, true-false pretest, sentence outline and paragraph abstract, they found covert involvement organizers (sentence outline and paragraph abstract) more effective for comprehension than the overt response organizers (pretests), but only for girls in the higher reading ability range. In the second study they compared the presence or absence of advance organization (paragraph abstract) with the presence or absence of concurrent organization (underlining) and found that for low test anxious pupils, a minimum amount of conceptual structuring or organization is most effective, while the opposite is true for high test anxious pupils.

Schnell (61) investigated whether the sex and the behavior of pupils influence a teacher's perception of reading comprehension levels and assignment of reading groups. It was found that when 50 teachers in grades 2-6, teaching 1,329 pupils, rated each child on level of reading achievement and pupil behavior and indicated to which reading group the child was assigned, that no sex bias was indicated when rating a child's reading achievement or assigning a child to a reading group. There was "small but repeated" evidence of pupil behavior bias in teachers' rating of reading achievement and assignment to reading groups; however this bias was asexual.

Stauffer and others (62) investigated whether there is a significant difference between the language arts approach and the basic reader approach when extended and applied through the middle grades. The results indicated that the basal reader children were superior in arithmetic computation, problem solving and rate of oral reading, while the language arts children were superior in fluency and elaboration and in the number of running words and different words in the creative writing samples.

Both sexes in the basal reader group scored higher than their counterparts on

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arithmetic computation and the basal reader girls scored higher than language arts girls in arithmetic problem solving and concepts. Language arts girls scored higher than basal reader girls in spelling test results. There was no significant difference in reading achievement between the groups.

VOCABULARY AND WORD ANALYSIS

Durr (63) compiled a list of high frequency words encountered by primary children in library books which they have selected and broke the list down into specific frequencies. The total number of running words were 105,280 and different words were 5,791 as found in 80 titles selected by primary grade pupils. When proper nouns and onomatopoeic words were omitted, 3,220 different words appeared. Ten words with highest frequency occurred 25,070 times, accounting for 23.76% of all words. One hundred and eighty-eight words with the highest frequency occurred 72,027 times, accounting for 68% of the running words.

Johns and Higdon (64) studied the Dolch list to see if it had outlived its usefulness. The 220 most frequent words in the Kucera-Francis Corpus were offered as a substitute for the Dolch list. It was assumed that children's vocabularies included a higher number of Corpus words than Dolch words in beginning readers. The results indicated that young children's spoken vocabularies contained significantly more Dolch words than Kucera-Francis words.

Croff (65) presented a new and preferred sequence for teaching letters. It is based on a combination of facts in this order of importance: the different graphic features of letters, the frequency with which letters appear at the beginning of words and syllables, the order in which children learn to pronounce sounds when shown letters, the ease with which children can learn to copy, write and name letters, and the phonological differences among sounds letters represent.

The new sequence is presented in Groff's study.

Gleitman and Rozin (66) advocated the use of the syllable as a unit for initial acquisition of reading. It is argued that since English alphabetic writing is based on a mapping between sound-stream and symbol, a decoding approach is necessary at early stages of the acquisition process. However, conventional "phonics" confound two very difficult tasks in initial learning: 1) acquiring the notion that the orthography teaches sound directly, and meaning only indirectly; and 2) understanding that the alphabetic unit corresponds to the highly abstract phonological unit "phoneme," which is both difficult to pronounce in isolation and difficult to recognize and "blend." Syllables are more natural units than phonemes because they are easily pronounceable in isolation and easy to recognize and to blend. A preliminary study that a simple 23-element syllabary can be acquired is presented.

Goodman (67) challenges the bases for the Gleitman-Rozin recommendation that children be taught to read English as a syllabary. It is noted that the syllable is subject to the complex relationship between morphology and dialect. The contention that children can understand what they can pronounce is refuted. The syllabary method does not consider reading as a psycholinguistic process.

Gleitman and Rozin (68) say Phoenician go home? as a response to Goodman. They say "That the purpose of reading is to extract meaning from print" as a point of agreement. However, they disagree with the following points made by Goodman:

1) The acquisition patterns for learning to speak and learning to read are the same.

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2) The fluent reader processes at the single structural level of meaning without using lower levels of language structure, under normal conditions.

3) A description of the fluent reading process defines the instructional reading method for the learner.

4) The poor reader has difficulty comprehending rather than "sounding out." (Gleitman and Rozin believe this is not true in the first few grades.)

5) The syllable is one more irrelevant phonics proposal. (They claim their work is based on research: they acknowledge the complexity of the syllable, but assert that their proposal is to teach only 60 English syllables.)

Knafe (69) presents results of two experimental tasks which use color, underlining, and word shape cues in CVC words to determine the influence of those cues in aiding 636 kindergarten to third grade subjects to detect structure in words. There were two separate tasks. Task 1 was a visual task designed to compare the responses of children who had already developed basic reading skills with the responses of children without basic reading skills. Task 2 was a visual and oral task designed for children who had not developed basic reading skills.

In task 1, a visual task, color cues and underlining cues appeared to aid the subjects in detecting structure and were substantially equal in their effectiveness. However, word shape was not an effective cue. In task 2, a visual and oral task using only kindergarten subjects, color cues and underlining aided structure detection; in the control group, significant differences were also found in favor of the word shape cue. The results suggest that color or underlining may be effectively used as cues to enhance children's learning of pattern similarities (e.g. cat, mat, sat).

Johnson (70) attempted to demonstrate that there is a logical sequence of presentation within each of 4 categories of letter-sound correspondences: 1) Single vowels, 2) Single consonants, 3) Vowel clusters and 4) Consonant clusters, on the basis of two criteria:

1) Frequency of occurrence and
2) Consistency of phonemic correspondence.

After presenting the sequences related to data from Venesky's computational analysis of letter-sound correspondence in 20,000 common English words, Johnson contends that his criteria for determining sequence are the most relevant. However, he points out that other criteria could have been considered such as, graphic similarity or articulatory similarity. He also suggests that his categories are not complete. For example, consonant blends and "patterned irregularities" (kn, mb, etc.) were not dealt with.

Burns (71) in a comment on overcoming difficulties in learning to read contends that the basic cause of reading problems in the U.S. is due to the lack of isomorphic correspondence between phonemes and graphemes. Therefore, he suggests the use of a single-sound-symbol alphabet to teach beginning reading. The alphabet must satisfy two conditions:

1) isomorphism and
2) construction of phoneme-grapheme relationship according to the frequency of occurrence in American-English.

READING ACHIEVEMENT AND SOME CORRELATES

Follman and Lowe (72) summarized the results of a research program of two parallel series of fifth and twelfth grade analyses of critical reading, critical thinking, reading, scholastic aptitude and scholastic achievement, test and subtest scores. It was

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concluded that critical reading and critical thinking have little or no unique variances; that both critical reading and critical thinking can be accounted for almost in entirety by language ability, particularly vocabulary; that critical reading and critical thinking, insofar as they exist, overlap slightly.

Sassenrath (73) analyzed reading measures at the elementary, secondary and college levels with students from each level and found that speed and comprehension in reading were separate factors at the college level but were combined into one factor of general reading ability at the two younger age levels. A separate factor of word analysis or word attack skills appeared for the two older groups but was incorporated into the general reading ability factor at the elementary level. The reading comprehension or general reading ability factor at all age levels consisted of a large number of variables or skills that need to be learned in order to read well.

Rosner (74) explored the correlates between auditory and visual perceptual skills and primary grade reading and arithmetic achievement with first and second grade subjects. It is indicated that auditory perceptual test scores account for significantly more variance in the language art subtest scores than in the visual perceptual test; the reverse was true in accounting for the variance in arithmetic scores. It is suggested that learning to read depends heavily upon auditory skills. It is suggested that instruction programs for primary grade children be based upon the strengths and deficits of their perceptual skills.

Messmore (75) attempted to investigate the relationship between inferred identification and two types of reading comprehension, broad or specific, at the third grade level.

Findings suggested that children who identified at high or moderate identification levels achieved significantly higher broad reading comprehension scores than low identifying children.

Grant (76) examined the effect of relevant curriculum materials upon the self-concept, achievement, and school attendance of black students in the third and sixth grades. It was found that relevant curriculum materials do have a positive effect in the school achievement and attendance of black inner-city students. However, there was no effect in the self-concept of these students.

Childers and Ross (77) studied the televiewing habits of 100 elementary school pupils related to IQ, GPA and achievement in standardized tests. It was found that a slightly negative, non-significant relationship existed between hours of televiewing and GPA. IQ was not related to hours of televiewing. The author stated that quantity and quality of televiewing were not predictors of pupil achievement.

Chiu (78) investigated children's reading preferences in relation to their sex and reading ability at the fourth grade level. Results showed that: (1) test-retest reliabilities for the ten categories with one-month intervals were high, especially for high and average groups; (2) boys preferred adventure, fantasy, humor and poetry; (3) there were no differences in reading preferences among the groups.

Sullivan (79) attempted to show the relationship of arithmetic reasoning, critical thinking, fluency of words, fluency of ideas, sensitivity to problems and general intelligence to literal and critical reading of sixth and eighth grade pupils. General intelligence and arithmetic reasoning accounted for more than 90 percent of the explained variance of literal and critical reading at both levels. Results imply, first, that further studies measure the effects of arithmetic reasoning exercises upon improving reading comprehension; secondly, that standardized tests be developed which

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tap creative thinking abilities.

DuBois (80) found no significant relationship between the selected visual perceptual, visual-motor, and inter-sensory integration skills and reading achievement after controlling for the effects of performance on verbal-based tests of intellectual efficiency.

Camp (81) examined the relationship between performance on tests of auditory and visual perception and learning rate in reading lessons. Subjects were 69 children with severe dyslexia (2-5 years below grade level) who participated in a standard tutorial program designed along behavior therapy lines. Prior to placement in the tutorial reading program, children were tested with the Wide Range Achievement Test, the Bender-Gestalt, the Raven, a test of auditory-visual integration, and a test of visual-spatial perception. Learning rates were determined for 42 children. Significant correlations were found among the psychometric tests but not between psychometric tests and learning rate. Children achieving above and below expectancy in tutoring differed significantly in learning rate and amount of gain over 6 months but not on any of the psychometric tests. It was concluded that perceptual deficiencies may be more frequent in disabled readers, but learning rate and achievement are not related to the degree of perceptual deficiency.

Belmont and others (82) provided, respectively, two matched groups of beginning readers with equivalent degrees of risk for reading failure with supplementary perceptual training or remedial instruction using letters and words, in addition to receiving regular first grade classroom instruction. After 7 months of supplementary instruction, both groups had made equivalent advances in reading level, indicating that neither perceptual training nor remedial reading was the superior program.

Rowell (83) attempted to determine the relationship between change in attitude toward reading and (1) achievement in the basic word identification, vocabulary, and reading comprehension skills, (2) sex, (3) socioeconomic status, and (4) age. While the students in the experimental group made significantly greater gains than the students in the control group in both change in attitude toward reading and achievement in most of the skills tested, statistically significant relationships were found in only four areas. These were between change in attitude toward reading and achievement in (1) recognition of words in isolation, (2) level of comprehension, (3) recognition of letters sounds, and (4) syllabication. No significant relationships were found between change in attitude toward reading and sex, socioeconomic status, and age of the students in the study.

Bruininks, Glaman and Clark (84) investigated the variance of five achievement expectancy formulas in identifying the presence of learning difficulties in a large population of third and sixth grade children.

The Lorge-Thorndike Intelligence Tests (1964) and the reading comprehension and arithmetic computation subtests of the Iowa Tests of Basic Skills (1964) were administered to the Ss in March of the same year. Percentages of the population having learning difficulty were calculated according to five expectancy formulas: 1) Bond and Tinker, 2) Monroe, 3) Horn, 4) Myklebust and 5) Menta 1 age. The presence of the reading problem was defined as two grades or more below expected achievement at the sixth grade level and one grade or more below at the third grade level.

Analysis revealed that using the nonverbal I.Q. score rather than the verbal I.Q. score in the various formulas identified a much larger percentage of children having learning difficulties. The use of the verbal I.Q. score produced more consistent percentages identified by the five formulas.

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Using the non-verbal I.Q. score, percentages varied for the third grade from 16% to 54.6%, whereas using the verbal I.Q. score, percentages varied from 11.7% to 16.7%. Regardless of the I.Q. score used, the mental age formula identified the greatest percentage of children having learning difficulties; the Bond and Tinker, the smallest. The researcher concludes that "many reported prevalence estimates are frequently anti-facts or differences in samples, defining criteria, instrumentation and methods employed to identify children with poor reading achievement."

Pikulski (85) attempted to determine the validity of the Slosson Intelligence Test, Peabody Picture Vocabulary Test and WISC as measures of intelligence of a group of 59 boys and girls who were disabled readers. All three of the brief measures were significantly correlated with the WISC.

Kennedy and Weener (86) tested the effectiveness of individualized training with the cloze procedure to improve reading and listening comprehension. The study used 4 groups of 20 third graders who were below average in reading. Two experimental groups were trained individually with the cloze procedure using visual and auditory modes of presentation respectively. One control group received an individualized oral reading program and the other control group remained in the regular classroom. The effects of training were measured with the reading and listening comprehension subtests of the *Durrell Listening-Reading Series* and two cloze procedure post tests, one presented orally and the other visually. The visual training produced significant group effects in listening and reading comprehension as measured by Durrell and cloze procedure post tests. The auditory training group showed significant effects on the Durrell listening comprehension test and on both cloze post tests. There was also a significant interaction effect resulting from the visual training group scoring higher on the reading comprehension than on the listening comprehension subtest and the auditory training group scoring higher on the listening comprehension subtest than on the reading comprehension subtest.

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